

WRITTEN ACTION

OF THE INTERNATIONAL

SEARCHING AUTHORITY (SUPPLEMENTAL SHEET)

International File No.

IAP15 Rec'd PCT/PTO 13 APR 2006

PCT/EP2004/052220

1. The following documents cited in the search report are named in this written action of the International Searching Authority:

D1 = US-A-5 038 405
D2 = DE 199 34 744 A
D3 = EP-A-0 367 555
D4 = US-A-6 054 965
D5 = FI 932 700 A
D6 = WO03/077362

2. **Re Point III:** Due to substantial objections regarding clarity (Art. 6 PCT), the Examiner is presently unable to examine the subject matter of Claim 11 with respect to novelty, inventive step, and industrial applicability.
- 2.1 The subject matter of Claim 11 is unclear with regard to the claimed "control signals" (Art. 6 PCT), since no control signals are defined in any of the preceding claims (see section 3.3 as well). In addition, the subject matter of Claim 11 lacks adequate support from the specification with regard to the claimed "module for generating a time reference." According to the specification (page 4, lines 2-3), this module is situated in the antenna amplifier itself, whereas the wording of the present Claim 11 also includes corresponding external modules.

In addition, the technical interrelationship of the claimed "module for generating a time reference" and the filter whose filter passband is changeable (Claim 1) is completely unclear, since the application documents do not disclose a single exemplary embodiment relating to this.

3. **Re Section VIII:** The Examiner is of the opinion that the present Application does not satisfy the requirements of Art. 6 PCT, since the subject matter of Claims 1, 5, 7, 8, and 10 is not clear.

3.1 Regarding the claimed feature that "the mid-frequency of the filter pass band is changeable..." the subject matter of Claim 1 is unclear within the meaning of Art. 6 PCT, since the claimed scope of protection is not supported by the specification and the drawings to the full extent. In this connection, it is determined that Claim 1 also includes a manually adjustable, e.g. mechanically adjustable filter, while the remaining application papers only describe configurations, in which the filter is tuned to the receiving frequency of the receiver with the aid of a tuning signal generated in the receiver.

3.2 The subject matter of Claim 5 is unclear with regard to the claimed "device for splitting up... the signal components at the output" (Article 6 PCT), since no signal components are defined in the preceding Claims 1-4.

3.3 The subject matter of Claim 7 is unclear with regard to the claimed "device" (Article 6 PCT), since no device is defined in the preceding Claims 1-4 and 6.

3.4 The subject matter of Claim 8 is unclear with regard to the claimed "additional control signals" (Article 6 PCT), since not one single control signal is defined in the preceding Claims 1-7. While Claim 1 does not define any signal at all, the term "tuning signal" is used in Claims 2-4, the term "signal components" not defined in further

detail is used in Claim 5, and the term "supply voltage" is used in Claim 6.

3.5 The subject matter of Claim 10 is unclear with regard to the claimed "control signal" (Art. 6 PCT), since no control signals are defined in any of the preceding claims (see section 3.4 as well).

4. **Re. Section V:** The Examiner is of the opinion that the subject matter of Claims 1-10 and 12-15 is not novel and not based on an inventive step, and that therefore, the requirements of Article 33 (2) and (3) PCT are not satisfied.

4.1a In view of the wording of present Claim 1, document D2 discloses (the references in parentheses relate to this document) an "antenna amplifier (see abstract and column 1, lines 3-10; Fig. 1-3) having

- at least one input ("HF of antenna(e)") for connecting an antenna; and
- at least one output ("to the tuner") for connecting a receiver (column 4, lines 10-16); as well as
- at least one means (11) of signal-level matching between the input and the output;
- a narrow-band filter (10) being situated between the input and the means of signal-level matching;
- the mid-frequency of the filter passband being changeable and tunable to the receive channel of the receiver (column 3, line 55 through column 4, line 35)."

Since document D2 discloses all of features of Claim 1, the subject matter of Claim 1 is not novel (Article 33 (2) PCT).

4.1b In view of the wording of present Claim 1, document D1 also discloses (the references in parentheses relate to this document) an "antenna amplifier (column 2, lines 29-33; Fig. 1-3) having

- at least one input (connection to antenna 36) for connecting an antenna (36); and
- at least one output (62) for connecting a receiver (12); as well as
- at least one means (58) of signal-level matching between the input and the output;
- a narrow-band filter (54; 118, 120, 122) being situated between the input and the means of signal-level matching;
- the mid-frequency of the filter pass band being changeable and tunable to the receive channel of the receiver (column 3, lines 28-36; column 4, lines 20-31)."

Regarding the claimed "narrow-band filter," it is conceded that the document does not use the term "filter" anywhere. From the overall disclosure of document D1, but especially from the disclosed functionality of the "antenna tuning circuits 54, "whose layout is represented in Figure 3 (see 36, 118, 120, 122), one skilled in the art immediately deduces that components 118 and 122 implement, in cooperation with antenna 36, narrow-band filtering of the antenna receiving signal. For this reason, the subject matter of Claim 1 is neither novel nor inventive over the antenna amplifier disclosed in D1.

4.1c The subject matter of Claim 1 is also not novel or inventive over the set-ups known from documents D3, D4, and D5.

In Figure 6, document D3 discloses two adjustable filters (34a and 34b; column 6, lines 21-29), which are situated inside the "electronic tuning circuits (143a, 143b)" disclosed in Figures 10 and 12 (column 8, lines 35-37). As is also apparent from Figure 12, a circuit referred to as a "tuner" is connected on the load side of these filters, the minimum configuration of this circuit only having to contain HF stages (column 10, lines 11-12). From the specification, it is also known that the AM/FM receiver (160) supplies, inter alia, an AGC control voltage to the circuits (157, 158) (column 10, lines 27-31), which means that at least the minimum configuration of the two circuits referred to as a "tuner" is evidently used for signal-level matching. Therefore, Claim 1 is not novel over document D3.

In Figure 1, Document D4 discloses an antenna amplifier (column 2, lines 20-67), which, in addition to an amplifier (Q11), includes an adjustable narrow-band filter that is chiefly made up of the antenna (L11), a tuning coil (L12), and a variable-capacitance diode (D12) (column 2, lines 32-34). Therefore, Claim 1 is not novel over document D3.

Document D5 discloses (Fig. 1) an antenna amplifier (1), whose input is connected to an antenna, and whose output is connected to a receiver (2). The antenna amplifier has an amplifier and a bandpass filter, which is connected between the input and the amplifier. Therefore, the subject matter of Claim 1 only differs from the antenna amplifier known from D5 in that the filter is a "narrow-band" filter, whose "mid-frequency is... changeable and tunable to the receive channel of the receiver."

In this context, the selection of the bandwidth of the filter is a function of the respective boundary conditions, which are primarily predefined by the characteristics and system requirements (e.g. intermodulation response, selectivity, image response) of the subsequent stages. Both document D1 and document D2 describe antenna amplifiers known to one skilled in the art, which contain a narrow-band filter tunable to the receiving frequency of the receiver (see sections 3.1a and 3.1b), in order to improve the receiving characteristics of the receiver connected in outgoing circuit (see D1: column 4, line 64 through column 5, line 2, as well as D2: column 4, lines 29-35). Therefore, the use of a narrow-band filter having a changeable mid-frequency is obvious to one skilled in the art (D5, D1 and D5, D2) and is thus not based on inventive step.

- 4.1d As already explained in section 3.1, Claim 1 also includes a mechanically adjustable filter, which is inserted in front of a signal-conditioning element (e.g. amplifier). Such configurations have been known for decades from the area of terrestrial television reception (see "channel amplifier").
- 4.2 The subject matter of Claims 2 and 3 is lacking in novelty over each of documents D1 (Fig. 2; column 5, lines 38-50), D3 (Fig. 12: 161b; column 10, lines 24-27), and D4 (Fig. 1: V_{MB}).
- 4.3 The subject matter of Claim 4 is lacking in novelty over each of documents D1 (column 5, lines 38-50 discloses the use of the oscillator signal generated by the receiver), D3 (discloses the use of variable-capacitance diodes [Fig. 6], which means that a d.c. voltage is used as a

tuning signal), and D4 (likewise discloses the use of a variable-capacitance diode, which is tuned with the aid of a d.c. voltage generated in unit 20).

Regarding the alternatively claimed signal forms for the tuning signal (e.g. "pulse-with-modulated signal"), it is determined that the application papers do not specify one single exemplary embodiment as to how these highly different signals are specifically used for tuning the filter. Therefore, the interaction between these alternatively claimed signal forms and the tunability of the filter is not disclosed or not inventive if one imputes correspondingly extensive background knowledge to one skilled in the art.

- 4.4 The subject matter of Claim 5 is lacking in novelty over document D1 (Fig. 3 discloses antenna output 62, which is connected to both HF amplifier 58 and "scanning receiver" 96).
- 4.5 The subject matter of Claim 6 lacks novelty over document D3 (Fig. 12 and column 10, lines 20-31 disclose an output 161, which provides a supply voltage via line 161c). The subject matter of Claim 6 is also known from document D4 (Fig. 1 and 2: connection A).
- 4.6 The subject matter of Claim 7 is lacking in novelty over document D1 (column 6, lines 12-27).
- 4.7 The subject matter of Claim 8 is lacking in novelty over each of documents D3 (Fig. 12 and column 10, lines 18-33 disclose a tuning signal on line 161a and an AGC control voltage on line 161c), and D4 (Fig. 1 and 2 disclose a tuning signal on line A and a switching voltage on line C).

4.8 The subject matter of Claim 9 is not based on an inventive step in view of documents D5 and D1, and D5 and D2. As already explained above (see section 3.1c), the subject matter of Claim 1 is not based on an inventive step, while the feature additionally claimed in Claim 9, that the antenna amplifier "includes a means for generating a return signal applied to a control terminal or to the output," is already completely known from document D5. In this respect, document D5 discloses a DTMF generator (13), whose output is connected to the antenna cable, and which, as a function of internal alarm signals (12), transmits corresponding control signals to the receiver.

4.9 The subject matter of Claim 10 is lacking in novelty over document D1 (column 6, lines 12-27 discloses that after selection of a receiving frequency [external event], both the filter and the direction of the antenna are changed).

4.10 The subject matter of independent Claim 12 is lacking in novelty over each of documents D1, D3, and D4. Each of these documents discloses a "receiver (D1, Fig. 1 and 2:12; D3, Fig. 12: 160; D4, Fig. 2:20) having means (D1, Fig. 1 and 2: 20, 26; D3: column 10, lines 18-33; D4, Fig. 2: 24, 25) for generating a tuning signal and/or additional control signals suitable for an antenna amplifier according to one of the preceding claims."

4.11 The subject matter of Claim 13 is not novel over document D1, which discloses a receiver (12), the means (20, 26) for generating tuning signal (82, 84) including a module (26), whose input is connected to an internal tuning signal (output of 20), and to whose output the tuning

signal (oscillator signal) is applied in a form suitable for transmission to an antenna amplifier (10, 80).

Regarding the alternatively claimed feature, according to which the input of the "module" not further defined is connected to a microcontroller and only one tuning signal suitable for the antenna amplifier must be provided at the output, reference is made to document D6, which discloses precisely such a receiver (Fig. 1). Document D6 discloses a receiver (27), which is connected on the input side to the output of an amplifier (25) (page 8, lines 24-29), which belongs to an antenna amplifier and, as required in Claim 12, has appropriate "means (29, 33) for generating a tuning signal," and which is suitable for an antenna amplifier (e.g. according to Claim 1), as well. As is implied by the specification (page 8, line 31 through page 9, line 6), these means include a "module (33) ..., whose input is connected to a microcontroller (29) ..., and to whose output the tuning signal is applied in a form suitable for transmission to an antenna amplifier (e.g. according to Claim 1)." Therefore, the subject matter of Claim 13 is also not novel over document D6.

4.12 In Claim 14, which depends from Claim 12, a receiver is claimed which, in addition to the "means for generating a tuning signal and/or additional control signals (Claim 12)," additionally has "means for detecting and/or evaluating information signals, which are generated by the antenna amplifier and are transmitted" In this regard, document D5 discloses a receiver (2), which includes a DTMF receiver (21) that detects and appropriately evaluates the alarm signal transmitted by

the antenna amplifier in an encoded manner. Therefore, the subject matter of Claim 12 only differs from the circuit disclosed in D5 in that the claimed receiver additionally has "means for generating a tuning signal and/or additional control signals." As was already explained in section 4.1c, the consideration of such means by one skilled in the art is obvious from document D1.

4.13 The subject matter of Claim 15 is not novel over any of documents D1, D3, and D4, since each of these documents discloses a receiving system, which includes at least an antenna amplifier according to Claim 1 (see section 4.1) and a receiver according to Claim 12 (see section 4.10). In addition, document D3 discloses (column 1, lines 3-6) the feature claimed purely optionally, according to which the receiving system is a motor-vehicle receiving system.